REGULATION 8
ORGANIC COMPOUNDS
RULE 28
EPISODIC RELEASES FROM PRESSURE RELIEF DEVICES AT PETROLEUM REFINERIES AND CHEMICAL PLANTS

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(Adopted July 16, 1980)

8-28-100 GENERAL

8-28-101 Description: The purpose of this Rule is to prevent the episodic emissions of organic compounds from pressure relief devices on any ~~equipment~~ process component handling gaseous organic compounds at petroleum refineries, and to collect information on episodic organic and inorganic compound emissions from petroleum refineries and chemical plants.
(Amended March 17, 1982, July 20, 1983, December 17, 1997)

8-28-110 Deleted September 6, 1989

8-28-111 Exemption, Evaporation Point: The provisions of this rule shall not apply to pressure relief valves which exclusively handle organic compounds exhibiting a 10% evaporation point greater than 150 degrees Celsius (302 degrees Fahrenheit) when using ASTM D-86 and/or inorganic compounds not listed in Section 8-28-401.5. ~~The provisions of this rule shall also not apply to thermal relief valves that are vented to process drains or back to the pipeline.~~
(Amended September 6, 1989, December 17, 1997, March 18, 1998)

8-28-112 Exemption, Storage Tanks: The requirements of this rule shall not apply to any pressure relief device on storage tanks. (Amended December 17, 1997)

8-28-113 Exemptions, Research and Development Facilities: The provisions of this Rule shall not apply to research or development facilities which produce only non-commercial products for research and development purposes.
(Adopted June 1, 1994)

8-28-114 Limited Exemption, Small Refineries: Section 8-28-304.2 shall not apply to petroleum refineries processing less than 20,000 barrels per stream day of crude, unless the District's evaluation of the Process Hazards Analysis in Section 8-28-303.1 determines that it is cost-effective and technologically feasible for the refinery to control the pressure relief devices.
(Adopted December 17, 1997)

8-28-115 Exemption, Thermal Relief Valves: The provisions of this rule shall also not apply to thermal relief valves that are vented to process drains or back to the pipeline.

8-28-200 DEFINITIONS

8-28-201 Chemical Plant: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man-made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining, not including petroleum refineries.
(Adopted July 20, 1983, amended December 17, 1997)

8-28-202 Pressure Relief Valve: The automatic pressure-relieving device actuated by the static pressure upstream of the valve. (Renumbered July 20, 1983)

8-28-203 Rupture Disk: The thin metal diaphragm held between flanges.
(Renumbered July 20, 1983)

8-28-204 Deleted December 17, 1997

8-28-205 Deleted December 17, 1997

8-28-206 Deleted December 17, 1997

8-28-207 **Modified Source:** The same definition contained in District Regulation 2-2-223.

(Adopted December 17, 1997)

~~**8-28-208 Parallel Service:** Additional pressure relief devices which protect a common piece or pieces of equipment. These additional pressure relief devices may be installed as spares to facilitate maintenance or because the design relieving capacity cannot be obtained with a single pressure relieving device. The pressure relieving devices do not need to have the same pressure setting to be considered parallel.~~

~~(Adopted December 17, 1997)~~

8-28-209 **Petroleum Refinery:** Any facility that processes products as defined in Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refining.

(Adopted December 17, 1997)

8-28-210 **Pressure Relief Device:** The automatic pressure-relieving device for discharges of ~~organic compounds~~ material which prevents safety hazards, prevents pressures from exceeding the maximum allowable working pressure of the operating process equipment, or prevents equipment damage. Such devices include, but are not limited to, pressure relief valves, emergency de-pressuring vents or rupture disks.

(Adopted December 17, 1997)

8-28-211 **Prevention Measure:** A reliable component, system, or program that will prevent a Release Event. Examples of prevention measures include, but are not limited to: (1) flow, temperature, level and pressure indicators with interlocks, deadman switches, monitors, or automatic actuators, (2) documented and verified routine inspection and maintenance programs, (3) inherent safer designs, (4) deluge systems. Operator training and documented and verified routine inspection and maintenance programs may count as only one of the 3 Prevention Measures required by Section 8-28-302.2, 8-28-303.2.1, and 8-28-~~304.1~~406. A component, system or program with a high probability for failure shall not be considered a Prevention Measure.

(Adopted December 17, 1997)

8-28-212 **Process Hazards Analysis (PHA):** A PHA is an organized effort to identify and analyze the significance of hazardous scenarios associated with a process or activity. For the purposes of this rule, PHA's are used to pinpoint weaknesses in the design and operation of facilities that could lead to a Release Event and to provide the facility with information to aid in making decisions for preventing such events.

(Adopted December 17, 1997)

8-28-213 **Qualified Person:** An APCO approved person who is qualified to attest to the validity of the Prevention Measures Procedures and who is a registered professional engineer in the State of California with expertise in chemical, mechanical or safety engineering. (Adopted December 17, 1997)

8-28-214 **Release Event:** Any release of organic or inorganic pollutant greater than 10 pounds resulting from a pressure relieving device, subject to this Rule, opening to the atmosphere. These events do not include releases that are vented to a vapor recovery or disposal system with at least 95% by weight organic compound control efficiency.(Adopted December 17, 1997)

8-28-215 **Responsible Manager:** A person who is an employee of the facility or corporation, who possesses sufficient corporate authority and who is responsible for the management of the facility. (Adopted December 17, 1997)

8-28-216 **Pressure Monitoring System Demonstration Report:** A report detailing the effectiveness of a pressure monitoring system for pressure relief devices in determining whether or not a release has occurred and the parameters associated with that release (duration and the amount of material released).

8-28-217 **Process Component:** Any pressure-related system of process equipment, including but not limited to, process vessels, tanks, heat exchangers, distillation columns, pumps, compressors or other equipment and peripheral piping that is not isolated from any other portion of the system by valves or any other obstructions under normal operating conditions.

8-28-218 **Tell-tale Indicator:** A physical non-electronic device installed on a pressure relief device that can visually indicate whether or not that pressure relief device has had a release event. Tell-tale indicators include, but are not limited to, socks, rupture disks, and flags.

8-28-300 STANDARDS

8-28-301 Deleted December 17, 1997

8-28-302 Pressure Relief Devices at New or Modified Sources at Petroleum Refineries: Any person installing a new refinery ~~source~~ process component or modifying an existing refinery ~~source~~ process component, that is equipped with at least one pressure relief device in organic compound service, shall meet all ~~of the following conditions:~~

~~302.1 Meet the~~ applicable requirements of Regulation 2, Rule 2, including Best Available Control Technology~~, and~~

~~302.2 Meet the Prevention Measures Procedures specified in Section 8-28-405~~.

(Adopted December 17, 1997)

8-28-303 Pressure Relief Devices at Existing Sources at Petroleum Refineries: ~~After the next scheduled turnaround following July 1, 1998, use~~ Use of a pressure relief device in organic compound service on any equipment at a Petroleum Refinery is prohibited, except when the device meets at least one of the following conditions prior to the equipment startup:

303.1 ~~Vent all~~ The pressure relief device~~s~~ is vented ~~from the source~~ to a vapor recovery or disposal system with at least a 95 percent by weight organic compounds control efficiency, and the control system ~~shall be~~ is properly sized per manufacturer's recommendations to handle the material from all devices it is intended to serve~~., or~~

303.2 The facility has:

2.1 ~~Meet~~ Implemented the Prevention Measures Procedures specified in Section 8-28-405, for the pressure relief device, and

2.2 No later than [18 MONTHS FOLLOWING ADOPTION], equipped the pressure relief device with a tell-tale indicator that will indicate whether of not a release occurred since the last inspection.

2.3 If a tell-tale indicator cannot be installed, no later than [18 MONTHS FOLLOWING ADOPTON] the facility may install an APCO-approved alternative pressure monitoring system in lieu of a tell-tale indicator in accordance with Section 8-28-408.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-304 Repeat Release – Pressure Relief Devices at Petroleum Refineries: ~~After the next scheduled turnaround following July 1, 1998, any~~ Any petroleum refinery ~~source~~ process component equipped with at least one atmospheric ~~that has at least one reportable Release Event from a~~ pressure relief device in organic compound service~~, including those in parallel service, in any consecutive five calendar year period~~ shall meet the following conditions:

304.1 ~~Within 90 days of the first Release Event from a pressure relief device, the facility shall conduct an additional, separate Process Hazard Analysis and meet the Prevention Measures Procedures specified in Section 8-28-405; and conduct a failure analysis of the incident, to prevent recurrence of similar incidents.~~ Within 120 days of ~~the first~~ a Release Event from any pressure relief device on the process component, the facility shall equip each pressure relief device of that ~~source~~ process component with a ~~tamperproof~~ tell-tale indicator that will show whether ~~that~~ a release has occurred since the last inspection. ~~The Process Hazard Analysis shall include an evaluation of the cost-effectiveness and technical feasibility of control devices to remedy the incident. This evaluation of control devices shall include, but shall not be limited to, the following: (1) installing additional flare gas compressor recovery capacity and (2) venting the pressure relief device that caused the Release Event to existing vapor recovery or disposal systems,~~ and

304.2 If, within five years of a first Release Event, a second Release Event occurs on the same process component, ~~Within~~ within one year of the second Release Event ~~from a pressure relief device in organic compound service on the same source, including those in parallel service~~, the facility shall vent all the pressure relief devices from the process component ~~that vent the second Release Event, including those in parallel service,~~ to a vapor recovery or disposal system with at least 95 percent by weight organic compounds control efficiency, and shall ensure that the control system ~~shall be~~ is properly sized per manufacturer's recommendations to handle the material from all devices it is intended to serve.

~~The five calendar year period of this section shall begin at the time that the District receives a Prevention Measure Plan as specified in Section 8-28-304.1~~.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-400 ADMINISTRATIVE REQUIREMENTS

8-28-401 Reporting at Petroleum Refineries and Chemical Plants: ~~A~~ Any indication of a Release Event at a petroleum refinery or chemical plant from a tell-tale indicator, a pressure monitoring system used in lieu of a tell-tale indicator, or other means ~~from a pressure relief device at petroleum refineries and chemical plants~~ shall be reported to the APCO ~~on~~ no later than the next working day following the venting. In addition, the following information shall be submitted in writing to the APCO within 30 days following the Release Event:

401.1 Date, time, and duration of the Release Event in minutes.

401.2 The ~~Identification of the~~ device by its unique number as required in Section 8-28-404 as well as its name and service commonly referred to by the facility.

401.3 Identification of the incident number assigned by the APCO for the Release Event ~~when the event is reported within one working day~~.

401.4 Type and size of device.

401.5 Type and amount of material released in pounds, accurate to two significant digits. Reportable materials are: total organic compounds, ammonia, hydrogen sulfide, chlorine, sulfur dioxide, sulfur trioxide, hydrofluoric acid, and difluoroethane.

401.6 ~~Necessary i~~Information and assumptions used to report the duration and amount released during the event.

401.7 Cause of the event.

401.8 A schedule for action to prevent re-occurrence of the event.

401.9 Results of fugitive emission inspection of the device done in accordance with the requirements of section 8-28-402.

(Amended February 18, 1981, December 17, 1997, March 18, 1998)

8-28-402 Inspection: Any person subject to this Rule shall comply with the following inspection requirements:

402.1 Any pressure relief device subject to this Rule shall be inspected at least once per day to determine if a Release Event has been indicated.

402.2 Any pressure relief device which has a Release Event and is subject to this Rule shall be inspected within 5 working days after ~~actuation~~ the Release Event to confirm compliance with Regulation 8, Rule 18 and the results reported in accordance with Regulation 8-28-401.9.

(Amended September 6, 1989, June 1, 1994, December 17, 1997)

8-28-403 ~~Records~~~~: Any person subject to this Rule shall comply with the following recordkeeping requirements:~~

~~403.1 Prevention measure records to demonstrate compliance with the standards in sections 8-28-302, 8-28-303, 8-28-304, and 8-28-405~~.

~~(Adopted September 6, 1989, amended June 1, 1994, December 17, 1997)~~

8-28-404 Identification: Any person subject to this rule shall comply with the following identification requirements:

404.1 ~~All~~ Any pressure relief ~~valves~~ device subject to this rule shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the pressure relief ~~valve~~ device location. Records and reports for each pressure relief ~~valve~~ device shall refer to this identification code.

404.2 Any process component equipped with at least one pressure relief device subject to this Rule shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the process component. Records and reports for each process component shall also refer to this identification code.

(Adopted June 1, 1994; Amended December 17, 1997)

8-28-405 Prevention Measures Procedures: All facilities using pressure relief devices in organic compound service which are subject to the standards in Section 8-28-300 and which have a potential for a Release Event shall comply with the following process safety requirements:

405.1 Explicitly establish training, equipment, inspection, maintenance and monitoring ~~levels~~ requirements such that the pressure relief device releases are minimized and

405.2 Using a Process Hazards Analysis, predict, plan and implement either:

2.1 At least 3 consecutive Prevention Measures for the Release Event before a pressure relief device will release or

2.2 At least one Prevention Measure for the Release Event before a pressure relief device will release. For single Prevention Measure pressure relief devices that vent a Release Event, within one year of the Release Event, the facility shall vent these pressure relief devices, including those in parallel service, to a vapor recovery or disposal system with at least 95% by weight organic compound efficiency.

405.3 Must be approved and signed by a Qualified Person and a Responsible Manager.

405.4 Must be submitted for review to the APCO to determine if the plan meets the requirements of subsections 8-28-405.1 through 405.3. The APCO shall provide a 30-day public comment period and will consider all comments received during this period prior to approval or disapproval of the procedures.

(Adopted December 17, 1997; Amended march 18, 1998)

8-28-406 Process Hazard Analysis: Within 90 days of the first Release Event from a pressure relief device subject to this Rule, the facility shall conduct an additional, separate Process Hazard Analysis and meet the Prevention Measures Procedures specified in Section 8-28-405; and conduct a failure analysis of the incident to prevent recurrence of similar incidents. The Process Hazard Analysis shall include an evaluation of the cost-effectiveness and technical feasibility of control devices to remedy the incident. This evaluation of control devices shall include, but shall not be limited to, the following: (1) installing additional flare gas compressor recovery capacity and (2) venting the pressure relief device that caused the Release Event to existing vapor recovery or disposal systems.

8-28-407 Pressure Monitoring System Demonstration Report: No later than [18 MONTHS FOLLOWING ADOPTION], the facility shall submit to the APCO a Pressure Monitoring System Demonstration Report that demonstrates that each pressure relief device subject to this Rule is monitored by a pressure monitoring system capable of detecting and any Release Event in accordance with this Section. The Pressure Monitoring System Demonstration Report shall include the following as applicable:

407.1 Diagrams clearly indicating the location of each pressure relief device associated with an identified process component and the location(s) of any device(s) used to monitor the pressure of each pressure relief device;

407.2 The sensitivity of the pressure monitoring device and period between calibrations (if any);

407.3 That the frequency of monitoring is at least once per minute or frequently enough to detect any Release Event;

407.4 The estimated pressure difference between the pressure relief device and the pressure monitoring system (including methodology for the estimation, engineering calculations and associated errors);

407.5 The normal operating pressure of the process component;

407.6 The set point of the pressure relief device and the maximum potential variation of the set point;

407.7 The methodology used for recording and archiving data developed from pressure monitoring; and

407.8 The feasibility of the installation of a pressure monitoring system to directly measure and record the pressure experienced at the pressure relief device.

407.9 A pressure monitoring system used in lieu of a tell-tale indicator shall be approved in writing by the APCO, directly monitor pressure at the site of the pressure relief device and record the pressure data, be equipped with an alarm.

8-28-408 Approval of an Alternate Pressure Monitoring System Used in Lieu of a Tell-Tale Indicator: No later than [12 MONTHS FOLLOWING ADOPTION] a facility shall obtain written approval for the use of a pressure monitoring system in lieu a of a tell-tale indicator pursuant to Section 8-28-303.2.3. The alternate pressure monitoring system shall meet all of

the following conditions, where applicable, in addition to the applicable provisions of Section 8-28-407:

408.1 Measure the pressure at the PRD;

408.2 Be equipped with a tamperproof alarm that would notify an operator of a potential Release Event; and

408.3 Be equipped with a pressure recording system that records both the pressure and the occurrence of alarms.

8-28-409 Turnaround Dates for Each Process Component: No later than [90 DAYS FOLLOWING ADOPTION], the facility shall submit to the APCO, a report listing all process components identified in accordance with Section 8-28-404.2, including a listing of all associated pressure relief devices subject to this Rule identified in accordance with Section 8-28-404.1, and the date of the first turnaround date following July 1, 1998, for each of the process components.

8-28-500 MONITORING AND RECORDS

8-28-501 Deleted December 17, 1997

8-28-502 Records: Any person subject to this Rule shall maintain the following records and make them available to the APCO upon request:

502.1 Prevention measure records to demonstrate compliance with the standards in Sections 8-28-302, 8-28-303, 8-28-304, and 8-28-405;

502.2 Records of all of the process components identified in accordance with Section 8-28-404.2, including a listing of all associated pressure relief devices subject to this Rule identified in accordance with Section 8-28-404.1;

502.3 No later than [90 DAYS FOLLOWING ADOPTION], records of daily inspection of pressure relief devices subject to this Rule equipped with telltale indicators, including the unique identification code of the pressure relief device pursuant to Section 8-28-404.1, the time of inspection, and the identity of operator conducting the inspection; these record must be maintained for a period of no less than two years;

502.4 No later than [90 DAYS FOLLOWING ADOPTION], records of pressure monitoring of any pressure relief device subject to this Rule identified in accordance with Section 8-28-404.1; these records must be maintained for a period of no less than two years.

(Adopted September 6, 1989; Amended June 1, 1994, December 17, 1997)

8-28-503 Monitoring: Any person subject to this Rule shall monitor all atmospheric PRDs using a Pressure Monitoring System capable of detecting any Release Event. The Pressure Monitoring System shall satisfy the following conditions:

503.1 The Pressure Monitoring System must monitor all applicable operating parameters at least once per minute, or frequently enough to detect any Release Event.

503.2 The Pressure Monitoring System must be sensitive enough to detect releases as small as 10 pounds.

503.3 The Pressure Monitoring System must be capable of determining the type and amount of material released in any Release Event, accurate to at least two significant digits.

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8-28-601 Deleted December 17, 1997

8-28-602 Determination of Control Efficiency: The control efficiency as specified Section 8-28-302.1, 8-28-303.1, 8-28-304.2, and 8-28-405.2.2 (with the exception of non-enclosed flares) shall be determined as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. 3) Flare control efficiency calculations approved by the APCO and EPA in writing or 4) other methods to demonstrate control efficiency approved by the APCO and EPA in writing. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted June 1, 1994; Amended December 17, 1997)

8-28-603 Deleted December 17, 1997